

IN THE CLAIMS:

Please add new claims 33-42.

1. (Previously Presented) A method for pre-cleaning apertures on a substrate, the method comprising:

disposing the substrate on a substrate support member in a process chamber;

cooling the substrate to a temperature of 100 degrees Celsius or less; and

exposing the substrate to a pre-clean process comprising forming a plasma from a gas mixture consisting of a non-reactive gas and a reactive gas selected from the group consisting of fluorine containing gases and hydrogen.

2. (Previously Presented) The method of claim 1, further comprising electrostatically chucking the substrate to the substrate support member.

3. (Previously Presented) The method of claim 1, wherein the cooling the substrate comprises:

flowing a gas through the substrate support member to an area between the substrate support member and the substrate.

4. (Previously Presented) The method of claim 1, wherein the cooling the substrate comprises:

transferring heat from the substrate through a thermoelectric device.

5. (Previously Presented) The method of claim 1, wherein the cooling the substrate comprises:

transferring heat from the substrate through the substrate support member to a heat transfer fluid.

6. (Canceled)

7. (Previously Presented) The method of claim 1, wherein the pre-clean process further comprises:

etching native copper oxide from the substrate.

8. (Previously Presented) The method of claim 7, wherein the pre-clean process further comprises:

inductively coupling about 1 to about 1000 Watts to the plasma; and
biasing the substrate support member with less than about 300 Watts.

9. (Previously Presented) The method of claim 7, wherein the pre-clean process further comprises:

reducing native oxides or reacting and removing photoresist residue and contaminants.

10. (Previously Presented) A method for pre-cleaning apertures on a substrate, the method comprising:

disposing the substrate on a substrate support member in a process chamber;
electrostatically chucking the substrate to the substrate support member;
cooling the substrate to less than about 100 degrees Celsius; and
exposing the substrate a pre-clean process comprising a plasma formed from a gas mixture consisting of a non-reactive gas.

11. (Previously Presented) The method of claim 10, wherein the pre-clean process further comprises:

inductively coupling about 1 to about 1000 Watts to the plasma;
biasing the substrate support member with less than about 300 Watts; and
regulating the chamber pressure between about 0.5 to about 100 mTorr.

12-17. (Canceled)

18. (Previously Presented) A method for pre-cleaning apertures on a substrate, the method comprising:

disposing the substrate on a substrate support member in a process chamber; exposing an at least partially exposed copper layer on the substrate to a pre-clean process while maintaining a substrate temperature of less than about 100 degrees Celsius; and depositing a bulk layer of copper on the at least partially exposed copper layer.

19-31. (Canceled)

32. (Previously Presented) The method of claim 1, wherein the non-reactive gas is selected from the group consisting of argon, nitrogen, and helium.

33. (New) The method of claim 10, wherein the non-reactive gas is argon.

34. (New) The method of claim 10, wherein the non-reactive gas is selected from the group consisting of helium and argon.

35. (New) The method of claim 10, wherein the cooling the substrate comprises: flowing a gas through the substrate support member to an area between the substrate support member and the substrate.

36. (New) The method of claim 10, wherein the cooling the substrate comprises: transferring heat from the substrate through a thermoelectric device.

37. (New) The method of claim 10, wherein the cooling the substrate comprises: transferring heat from the substrate through the substrate support member to a heat transfer fluid.

38. (New) The method of claim 18, wherein the bulk layer of copper is formed by chemical vapor deposition, physical vapor deposition, electroplating, or spraying.

39. (New) The method of claim 18, wherein the exposing the substrate to a pre-clean process comprises forming a plasma from a gas mixture comprising a non-reactive gas.

40. (New) The method of claim 18, wherein the exposing the substrate to a pre-clean process comprises forming a plasma from a gas mixture consisting of argon.

41. (New) The method of claim 39, wherein the gas mixture further comprises a reactive gas.

42. (New) The method of claim 18, further comprising electrostatically chucking the substrate to the substrate support member.